

# Update on Controlling Greenhouse Gases from International Aviation

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## Introduction

The European Union's (EU's) decision in 2008 to control greenhouse gas (GHG) emissions from international flights under its Emissions Trading Scheme (EU ETS),<sup>1</sup> effective January 1, 2012, has been contentious among nations, prompting threats of noncompliance and retaliatory trade actions. The U.S. Administration and other national governments have objected to the EU law for intruding on national sovereignty with regard to its application to flight operations outside EU airspace. Strong industry opposition has led both the U.S. House and Senate to pass a bill (S. 1956) that directs the Secretary of Transportation to prohibit U.S. airlines from participating in the EU ETS if he determines that doing so is in the public interest. The EU has refused to eliminate the international aviation provisions but has proposed to suspend enforcement on flights to and from EU countries until September 2013. This "stopping the clock" is intended to allow time for nations to agree on equivalent, global actions under the International Civil Aviation Organization (ICAO). Details of the proposed EU amendment are not yet available.

The EU ETS inclusion of international aviation, the reasons leading to it, its costs, and other aspects are discussed in CRS Report R42392, *Aviation and the European Union's Emission Trading Scheme*. This report summarizes a few recent developments in the continuing debate over whether and how to address GHG emissions from international aviation.

## Congress Passes Legislation Authorizing Directive to U.S. Airlines Not to Participate in EU ETS

According to *Reuters*, Senator Thune, a sponsor of the bill that passed both chambers, stated: "While I am pleased the EU has temporarily suspended its efforts to unilaterally impose a tax on our airlines flying over U.S. and international airspace, the EU's announcement does not rule out future efforts to tax foreign carriers."

On November 13, 2012, the House passed the European Union Emissions Trading Scheme Prohibition Act of 2011 (S. 1956) without amendment. The Senate passed the measure by unanimous consent on September 22, 2012 (S.Rept. 112-195), and it was presented to the President on November 16, 2012. The bill directs the Secretary of Transportation to prohibit U.S. aircraft operators from participating in the EU ETS, if he determines that a prohibition would be in the public interest, taking into consideration a variety of economic, energy, environmental, and foreign relations factors, and a subsequent public hearing.<sup>2</sup> The Secretary may reassess the determination of public interest after the public hearing, amendments to the EU ETS, adoption of an international agreement, or enactment of a U.S. law or issuance of a final rule addressing aircraft emissions.<sup>3</sup>

The legislation also directs the Administration, as appropriate, to use its current authority to negotiate a worldwide approach to address aircraft emissions. Further, the Secretary and other officials must use, as appropriate, existing authorities that are in the public interest necessary to hold aviation companies harmless from the EU ETS. The bill prohibits use of taxpayer dollars to pay taxes or penalties imposed on U.S. air carriers under the EU ETS. The bill does not identify

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<sup>1</sup> EU Directive 2003/87/EC of October 13, 2003, as amended by EU Directive 2008/101/EC on November 19, 2008.

<sup>2</sup> S. 1956, 112<sup>th</sup> Cong. §2(a) (2012).

<sup>3</sup> *Id.* at §2(c).

what authorities may exist to hold aircraft operators harmless.<sup>4</sup> Also, the potential cost of holding operators harmless could vary dramatically depending on whether carriers comply or are prohibited from complying with the EU ETS.

## EU Proposes to Suspend Enforcement on International Flights Until September 2013, Pending ICAO Agreement

On November 12, 2012, the European Commission recommended that the EU suspend enforcement under the EU ETS on flights to and from the EU;<sup>5</sup> flights within the EU would still be covered regardless of the country of origin of airline operators. The EU proposal would “stop the clock” on implementation of the international aviation aspects of the EU ETS until at least September 2013, pending the outcome of the Assembly of the International Civil Aviation Organization (ICAO).<sup>6</sup> The proposal would defer aircraft operators’ obligations to surrender emissions allowances from air traffic to and from the EU by one year. If this amendment is passed, it would provide for automatic resumption of enforcement if a global scheme to limit greenhouse gas emissions from aviation is not agreed upon under ICAO.

The European Commission is recommending this amendment “[i]n order to create a ‘positive atmosphere’ around these very important [ICAO] negotiations,” said the EU Commissioner for Climate Action, Connie Hedegaard. “Let me also be very clear if [the ICAO process] ends in nothing then needless to say we are back to where we are today with the EU ETS. And we are back there automatically—automatically.... We create this space for positive negotiations but it has to be used.... Now the time for talking and positioning is over.... A global deal on aviation should be within reach.”<sup>7</sup>

Details of the proposed suspension are not yet available and must be passed into EU law before taking effect. The action requires a written amendment to the EU Directive and “co-decision” by the EU Parliament and the Council of the 27 member States. Certain aspects of the amendment seem likely:

- All aircraft operators, regardless of country of origin, will continue to be covered under the EU ETS for all flights within and among the EU and most countries of

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<sup>4</sup> See discussion in CRS Report R42392, *Aviation and the European Union’s Emission Trading Scheme*, under “Congressional Action.”

<sup>5</sup> European Commission. *Stopping of the Clock of ETS and Aviation Emissions Following Last Week’s International Civil Aviation Organisation (ICAO) Council*, November 12, 2012.

<sup>6</sup> The 1944 Chicago Convention on International Civil Aviation established the Provisional International Civil Aviation Organization, which became ICAO in 1947. Since 1947, ICAO has been an entity of the United Nations. ICAO supports cooperation among its member countries on non-binding standards and recommended practices for safety, security, environmental protection, and other matters affecting civil aviation. The United States is a Signatory to the Chicago Convention and is one of 190 current member States of ICAO. While the EU is not a Signatory of the Chicago Convention, all of its 27 member States are. The EU maintains an observer status within ICAO. ICAO develops non-binding standards, guidance, and policies for States and the aviation industry to use. ICAO does not have regulatory authority. Once it adopts guidance or standards, it is up to member States to enact ICAO’s recommendations into law or regulation and to enforce them, as appropriate. ICAO has dispute resolution procedures, notably Article 84 of the Chicago Convention, when disagreements arise on how States may be implementing their regulations or ICAO’s resolutions. For more information, see CRS Report R42392, *Aviation and the European Union’s Emission Trading Scheme*.

<sup>7</sup> Connie Hedegaard, EC press conference, November 12, 2012, at <http://ec.europa.eu/avservices/player/streaming.cfm?type=ebsvod&sid=215099>.

the European Free Trade Association (EFTA), namely Iceland, Lichtenstein, and Norway.

- The amendment will likely be written so that enforcement of the EU ETS on international of flights to and from the EU and EFTA region will automatically resume if an accord is not reached by the ICAO General Assembly in September 2013.
- Also deferred for one year will be the obligation of aircraft operators of flights to and from EU and EFTA countries to monitor and report their GHG and related data to their EU administering countries.
- Aircraft operators will not be required to submit GHG emission allowances (permits) in April 2013 for their emissions in 2012. Aircraft operators will be required to submit allowances for their 2013 GHG emissions in April 2014 if ICAO does not reach agreement and the EU ETS international aviation provisions automatically resume.

In early 2012, EU officials stated that the EU would agree to suspend inclusion of international aviation in the ETS only if a new, global ICAO scheme met three conditions:

- It must deliver more emissions reductions than the EU ETS on its own.
- It must have targets and measures.
- Any action must be non-discriminatory and apply to all airlines.<sup>8</sup>

The EU seeks a worldwide scheme that would be applied uniformly to all aircraft operators regardless of the country in which they are registered. A number of countries, including China and India, have protested consideration of mandatory emissions requirements on all ICAO nations. It is unclear whether the current proposal to freeze enforcement will encourage ICAO to adopt an international emissions scheme that complies with the characteristics detailed above.

## **ICAO Continues Negotiation on a Global Market-Based Mechanism to Limit GHG Emissions from Aviation**

The EU proposal to “stop the clock” on its extra-EU aviation provisions is reportedly based on progress made in negotiations under ICAO on a global, market-based mechanism (MBM) to reduce aviation emissions.<sup>9</sup> On November 9, 2012, the ICAO Council reportedly decided to establish a High Level Policy Group that will reduce the three options currently under consideration down to one option.<sup>10</sup> The Council decision also apparently explicitly referred to the “global MBM.”<sup>11</sup> The three MBM options now on the table include the following:

- a global, mandatory “offsetting” scheme;
- a global, mandatory offsetting scheme with a revenue-generating mechanism; or

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<sup>8</sup> European Commission, *op cit*.

<sup>9</sup> *Ibid*.

<sup>10</sup> *Ibid*.

<sup>11</sup> As seems typical of proceedings under ICAO, documentation is not publicly available on the organization’s website or through other identifiable channels.

- a global emissions cap and trading scheme.<sup>12</sup>

Reaching an agreement under ICAO by September 2013 may be challenging, given the divisions that have made progress slow thus far.<sup>13</sup> Nations have discussed means to abate GHG emissions from aviation in ICAO for almost two decades. In 1996, they made a policy statement strongly recommending that any environmental levies be in the form of charges (i.e., on actual emissions performance) rather than taxes, and that the funds collected should be applied in the first instance to mitigating the environmental impact of aircraft engine emissions.<sup>14</sup>

Under pressure from the aviation sector, the 1997 Kyoto Protocol (which the United States has not ratified) exempted international aviation from its scope and specified that the industrialized country Parties should pursue limitation or reduction of GHG emissions from aviation “bunker” fuels used for international flights, working through ICAO.<sup>15</sup>

ICAO members have agreed to a variety of voluntary actions and goals.<sup>16</sup> For example, ICAO members have agreed to submit action plans by June 2012, although not all have met this deadline (**Figure 1**). They also agreed to a voluntary, shared goal to cap net aircraft carbon emissions from 2020 on, and to work to achieve a 50% reduction of net carbon emissions from 2005 levels by 2050. However, ICAO has not agreed to worldwide mandatory measures, such as market-based mechanisms to reduce emissions (such as the EU ETS). Faced with coverage of international flights under the EU ETS in 2011, the ICAO Council agreed to accelerate its work, including continuing to explore market-based mechanisms (MBMs), CO<sub>2</sub> standards for new aircraft, and other options. In mid-2012, ICAO’s environment committee approved guidelines on measurement of CO<sub>2</sub> emissions from new aircraft, as a step toward possible agreement among countries to regulate those emissions.

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<sup>12</sup> The ICAO Council in March 2012 identified these three options, plus another global emissions “baseline and credit system” that was eliminated in June 2012.

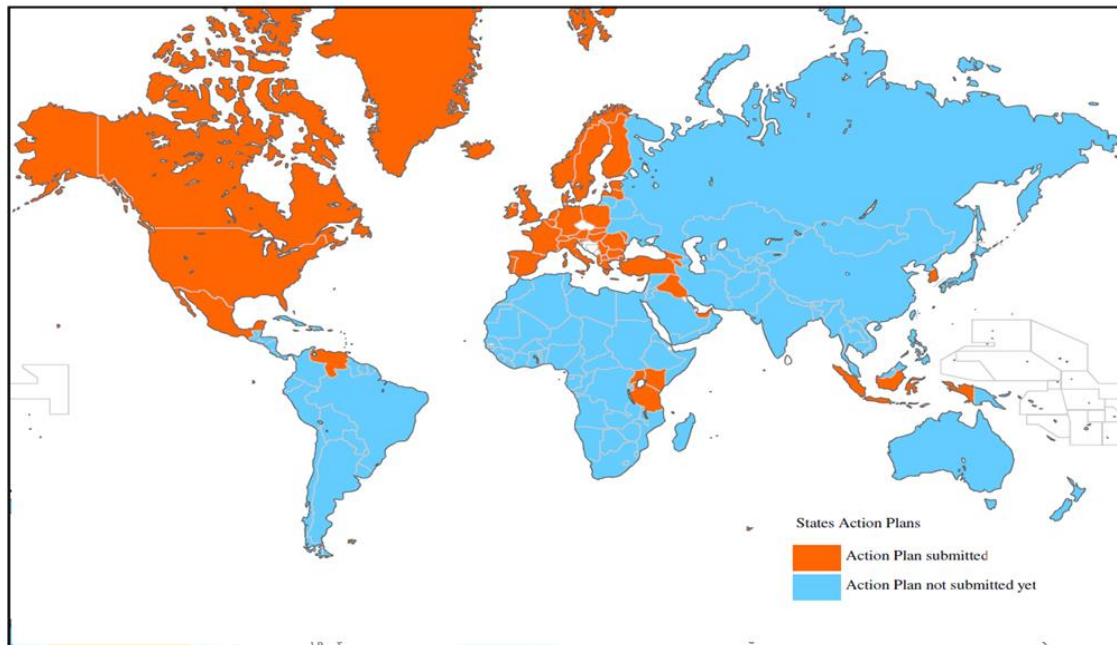
<sup>13</sup> For example, “The problem is almost no-one thinks the ICAO can deliver in time, if at all, prompting warnings of rounds of retaliation,” according to authors Lewis, Barbara, and Valerie Volcovici. “U.S. Airlines Brace to Lobby New President on EU Row.” *Reuters*, November 4, 2012. <http://www.reuters.com/article/2012/11/04/eu-airlines-ets-idUSL1E8M20NB20121104>.

<sup>14</sup> The EU ETS appears to conform with these ICAO recommendations. More discussion of past ICAO work on GHG emissions may be found in the Appendix to CRS Report R42392, *Aviation and the European Union’s Emission Trading Scheme*, op. cit.

<sup>15</sup> Article 2.2 of the Kyoto Protocol.

<sup>16</sup> For a longer discussion of ICAO agreements and activities regarding greenhouse gas emissions, see the Appendix in CRS Report R42392, *Aviation and the European Union’s Emission Trading Scheme*.

**Figure I. Status of ICAO Member States' Aviation GHG Action Plans**  
as of September 4, 2012



**Source:** Boubacar Djibo, Director, Air Transport Bureau, ICAO. "Agenda Item 6: Aviation and Environment," presented at 49<sup>th</sup> Conference of DGCA: Asia and Pacific Regions (New Delhi, India; 8-10 October 2012).

**Notes:** As of September 4, 2012, 47 Member States, representing 62% of global international air traffic, had submitted their action plans to ICAO, according to the source. Greenland is self-governed within the Kingdom of Denmark, while Denmark continues to conduct Greenland's foreign affairs.

A number of low- to moderate-income countries, including China and India, have thus far declined to consider mandatory emission reduction obligations, seeking a bifurcation of commitments, such as the developed/developing country division under the UN Framework Convention on Climate change that may lead to the end of the Kyoto Protocol GHG reduction obligations by 2020.<sup>17</sup> They also contend that "assistance to developing countries is the necessary and sufficient conditions [sic] for ICAO to maintain the leadership in this regard...."<sup>18</sup> In other words, they propose conditions for their participation in an ICAO scheme that would include "technology transfer," financial resources, and capacity building programs to boost governance skills.<sup>19</sup>

<sup>17</sup> The UNFCCC distinguishes between "developed" and "developing" countries, as well as other distinctions, without clearly defining them or how a country may "graduate" from developing to developed, and hence take on stronger obligations. The 1995 "Berlin Mandate" of the Parties to the UNFCCC, in establishing the negotiations that led to the Kyoto Protocol, specified "no new commitments" for developing countries. Many high-income countries, including the United States, have said that they will not agree to further, mandatory GHG reductions that do not include "common but differentiated" commitments by all major emitting countries. China and other lower-income countries hold that "differentiated" means that they should not take on mandatory obligations. For more information, see CRS Report R40001, *A U.S.-Centric Chronology of the International Climate Change Negotiations*.

<sup>18</sup> MU Yang, "Remarks by Mr. MU Yang at the ICAO Seminar of Assistance for Action" (November 3, 2012), at [http://www.icao.int/Meetings/acli/Documents/China\\_24October-pm.pdf](http://www.icao.int/Meetings/acli/Documents/China_24October-pm.pdf).

<sup>19</sup> Ibid.



## Costs of Including International Aviation in the EU ETS

Opponents of the EU ETS international aviation provisions have cited a variety of objections, including that the provisions violate national sovereignty of non-EU countries; that airlines have already made great strides in improving efficiency and CO<sub>2</sub> emissions rates; and that the scheme is intended to raise revenues for a fiscally challenged EU. Opponents also frequently protest the costs of including international aviation in the EU ETS. For example, in 2009, the Air Transport Association of America (ATA, now Airlines for America or A4A)<sup>20</sup> estimated that the EU ETS would cost U.S. carriers \$3.1 billion over nine years, or an average of \$344 million per year.<sup>21</sup> In November 2011, Bloomberg Government<sup>22</sup> estimated that, depending on the price of allowances, the total compliance cost would range between \$0.9 billion and \$4.2 billion over nine years, if airlines do not shift to more fuel-efficient planes or to lower-carbon fuels. At average allowance prices since 2005 (US\$11.40 per metric ton CO<sub>2</sub>), the cost would be \$2.1 billion over nine years, or \$233 million per year.<sup>23</sup>

Assuming the costs above, the effects on airplane tickets to and from the EU would be small. The cost per ticket in 2012 of a one-way flight from New York to Paris, if airlines pass through the value of freely given allowances, would be about €12 (US\$15.85), according to the EU's estimates.<sup>24</sup> If airlines do not charge passengers for the value of free allowances, an average cost increase per ticket for flights from the United States to EU countries could be on the order of €2-€5 each way. A rough calculation by CRS supports the EU's estimate: according to the EU Commission, the per-passenger CO<sub>2</sub> emissions on a flight between New York and London are estimated at 385 kg. At a hypothetical EU allowance price of €10 per metric ton, if all allowances needed to be purchased, the incremental cost would be about €3.85 per passenger (about \$5 at current exchange rates, or more than US\$6 at the weakest dollar exchange rates of the past few years). However, as aircraft operators receive free 85% of allowances for 2012 and 82% for 2013-2020, the per-passenger costs in the near term could be less than \$1 to \$2 per passenger from New York to London, and proportionally more on longer flights. On most flights between the EU and the United States, the additional per-passenger cost would likely be less than \$5 in the near term, given the high proportion of free allowances provided. Though several U.S. companies announced in early 2012 that they would add surcharges to passenger tickets to cover the cost of the EU ETS, CRS has not discovered any formally identified in those airlines' listed taxes and

<sup>20</sup> The ATA has changed its name to Airlines for America, A4A.

<sup>21</sup> Airlines for America, "ATA Predicts U.S. Industry, Economy Will Lose Billions due to Unlawful EU ETS," Washington, DC, July 27, 2011, available at <http://www.airlines.org/Pages/ATA-Predicts-U.S.-Industry,-Economy-Will-Lose-Billions-due-to-Unlawful-EU-ETS.aspx>. To put this figure in context, the industry projects profits in 2012 to be \$4.1 billion and in 2013 to be \$7.5 billion, according to the International Air Transport Association. <http://www.aviationpros.com/article/10797337/ab-industry-news-oct12>. Aviation sector profits have been volatile over the past decade.

<sup>22</sup> Zisman, Matthew, and Randolph Walerius. *EU Aviation Emissions: Impact on U.S. Airlines and Freight Carriers*. Bloomberg Government, November 29, 2011.

<sup>23</sup> Aviation allowance futures for 2012 through 2015 in the EU market have been ranging from €7.0 to €8.5 or lower (US\$8.93 to \$10.83) in recent months, according to prices listed at the European Energy Exchange, at <http://www.eex.com>. (The EU has been taking steps to bolster the sagging prices of EU allowances.) Few if any allowance price projections range as high as \$25 per allowance through 2020.

<sup>24</sup> <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/11/1077>. In other words, if the airlines charge passengers for the value of 100% of allowances (including the 82%-85% they get free), rather than the smaller percentage they may need to purchase to cover their emissions, consumers will pay more.



surcharges on their websites. The small price impact of the EU ETS relative to other expenses and charges (e.g., baggage fees and fuel expenses) means that EU ETS effects, including on demand for air services, would likely be difficult to discern.

Even at doubled allowance prices, the extra costs imposed on airlines would be small compared to fuel costs, lease payments, and other major cost components. One airline consultant presentation estimated for several airlines and flights that allowance prices of €40 per metric ton (six times current prices and 50% higher than prices forecast for 2025) would decrease net profits before taxes by 0.5% to 2%.<sup>25</sup> These estimates were based on compliance with the scheme. Failure to comply would appear to result in significantly higher costs, incurred as penalties.<sup>26</sup>

Nonetheless, the same consultants note that airlines operate on “razor-thin margins” and would have varying abilities to pass EU ETS costs on to customers; this could have a marginal sectoral impact on weaker companies and those with older, inefficient aircraft. A recent study<sup>27</sup> by MIT researchers and others estimated small cost impacts of the EU ETS on U.S. carriers, and that aviation operations would continue to grow. Airline profits could increase, especially if carriers are able to pass on all additional costs to their customers. This possibility, however, would depend on the degree of competition and the portion of the costs of allowances that airlines can pass through to customers. Windfalls could result if carriers increase ticket prices to reflect the prices of all allowances but only need to pay for a fraction of them, or are able to sell unneeded allowances. However, researchers also concluded that profits would decline to the degree that carriers must purchase a greater share of their allowances and that competition increases.

Industry representatives have said that the EU ETS “is counterproductive to U.S. airlines’ ongoing efforts to invest in the technology, operations and infrastructure measures that enhance fuel efficiency and reduce emissions.”<sup>28</sup> If demand for air travel increases as rapidly as many project, aircraft owners would need to spend more on purchase of emission allowances or to invest in alternative fuels or more efficient aircraft, or pursue other means to meet the requirements of the EU ETS. In principle, any revenues collected from government sales of allowances could be recycled back into the industry<sup>29</sup> to ease those costs, though no concrete proposals have been put forward among possible policy options. While the EU Directive recommends using revenues to address climate change, there are no specific requirements that proceeds from airline participation in the EU ETS be used on efforts to reduce GHG emissions in the aviation sector.

For broader discussion of aviation emissions of GHG, the EU ETS provisions covering aviation, emission control technologies, and economic and foreign relations issues, see CRS Report R42392, *Aviation and the European Union’s Emission Trading Scheme*.

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<sup>25</sup> Crichlow, Gary, and Barry Moss. “EU ETS: Implications for the Aviation Industry,” presented at the Berwin Leighton Paisner Seminar, March 9, 2010.

<sup>26</sup> The EU imposed penalties are set at €100 per metric ton, which is considerably higher than current market prices for allowances, appearing to provide sufficient incentive for airlines to acquire sufficient allowances in the market to adequately cover their operations, unless they are prohibited from participating in the EU ETS.

<sup>27</sup> Malina, Robert, Dominic McConnachie, Niven Winchester, Christoph Wollersheim, Sergey Paltsev, and Ian A. Waitz. “The impact of the European Union Emissions Trading Scheme on US aviation.” *Journal of Air Transport Management* 19, no. 0 (March 2012): 36-41.

<sup>28</sup> A4A. “A4A Lauds House Passage of Bill That Allows U.S. Airlines to Avoid Illegal EU ETS Aviation Scheme,” November 13, 2012. <http://www.airlines.org/Pages/A4A-Lauds-House-Passage-of-Bill-That-Allows-U.S.-Airlines-to-Avoid-Illegal-EU-ETS-Aviation-Scheme.aspx>.

<sup>29</sup> For example, revenues could be given back to airlines, perhaps proportionate to ton-miles flown, or to support partnerships for research and development of new technologies, invest in more efficient air traffic management, or other measures.

## **Author Information**

Jane A. Leggett  
Specialist in Energy and Environmental Policy

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